

### Claims

1. A gate arrangement for an air coolant flow, the gate arrangement comprising a gate component which defines a passage with an opening and a gate member, the gate component and the gate member having respectively different thermal coefficients of expansion in order that the gate member selectively opens or closes the opening dependent upon temperature.
2. An arrangement as claimed in claim 1 wherein the gate member has a lower coefficient of expansion than the gate component in order that the gate member closes the opening below a specific temperature.
3. An arrangement as claimed in claim 1 wherein the gate arrangement is one of integral with and configured for thermal coupling with a machine which includes a coolant airflow path to regulate airflow dependent upon the temperature of that machine.
4. An arrangement as claimed in claim 1, wherein the gate member is mounted axially opposite the opening of the gate component.
5. An arrangement as claimed in any of claims 1, wherein the gate member is mounted at an angle to the axis of the opening of the gate component.
6. An arrangement as claimed in claim 1 wherein the gate member is adjustable relative to the opening.
7. An arrangement as claimed in claim 6 wherein the gate member is adjustable by a screwthread mounting to allow controlled adjustment by one of displacement and resistive torque due to one of compression and extension engagement of the gate member with the opening.
8. An arrangement as claimed in claim 1 wherein the gate member has a shaped end for engagement with the opening of the gate component.
9. An arrangement as claimed in claim 9 wherein the shaped end is one of barrelled and tapered in cross-section to facilitate engagement with the opening.
10. An arrangement as claimed in claim 9 wherein the opening is reciprocally shaped for consistency with the shaped end of the gate member.

11. An arrangement as claimed in claim 1 wherein the gate member comprises at least two different materials with the differing rates of thermal expansion to alternately open and close the opening of the gate component with time at selected temperature ranges.
12. An arrangement as claimed in claim 1 wherein at least one of the gate member and the gate component include guide means to facilitate engagement between the gate member and the opening.
13. An arrangement as claimed in claim 1 wherein the gate member is substantially hollow.
14. An arrangement as claimed in claim 13 wherein the gate member has a closed end for engagement with the opening of the gate component.
15. An arrangement as claimed in claim 1 wherein the gate member includes a compliant engagement surface for engagement with the opening of the gate component.
16. An arrangement as claimed in claim 1 wherein the opening is substantially in alignment with the major axis of the gate member.
17. An arrangement as claimed in claim 1 wherein the opening is substantially radially presented to the major axis of the gate member.
18. A turbine blade including a gate arrangement as claimed in claim 1 in an air coolant path in that turbine blade.
19. A jet engine including a turbine blade as claimed in claim 1.